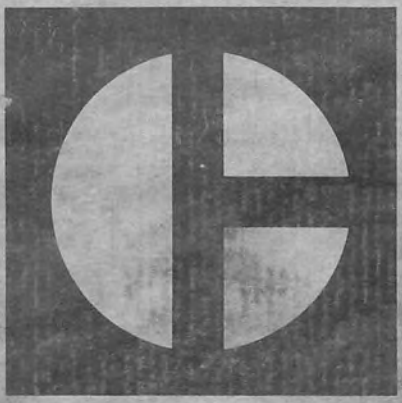
GEG00003-03



# OPERATOR'S GUIDE

# D7, D8, D9 TRACTORS

## POWER SHIFT

# FOREWORD

This guide is a reference for the new operator and a refresher for the experienced one. Read — study — and keep it handy.

Illustrations guide the operator through the correct procedures of checking, starting, operating and stopping the vehicle and attachments.

Operating techniques outlined in the guide are basic. Skill and techniques develop as the operator gains knowledge of the vehicle and its capabilities.

Your safety and the safety of others depends upon care and judgment in the operation of this vehicle. A careful operator is good insurance against an accident.

Most accidents, no matter where they occur, are caused by someone's failure to observe and follow simple and fundamental rules or precautions. For this reason most accidents can be avoided by recognizing hazards and taking steps to avoid them before an accident occurs.

Regardless of the care used in the design and construction of any type of equipment, there are conditions that cannot be completely safeguarded against without interfering with reasonable accessibility and efficient operation.

Some photographs in this publication may show details or attachments that may be different from your unit. Also, the ROPS, for some photographs, has been removed for illustrative purposes.

Continuing improvement and advancement of product design may cause changes to your machine which may not be included in this publication. Each publication is reviewed and revised, as required, to update and include these changes in later editions.

When a question arises regarding your Caterpillar product, or this publication, please consult your Caterpillar dealer for the latest available information.

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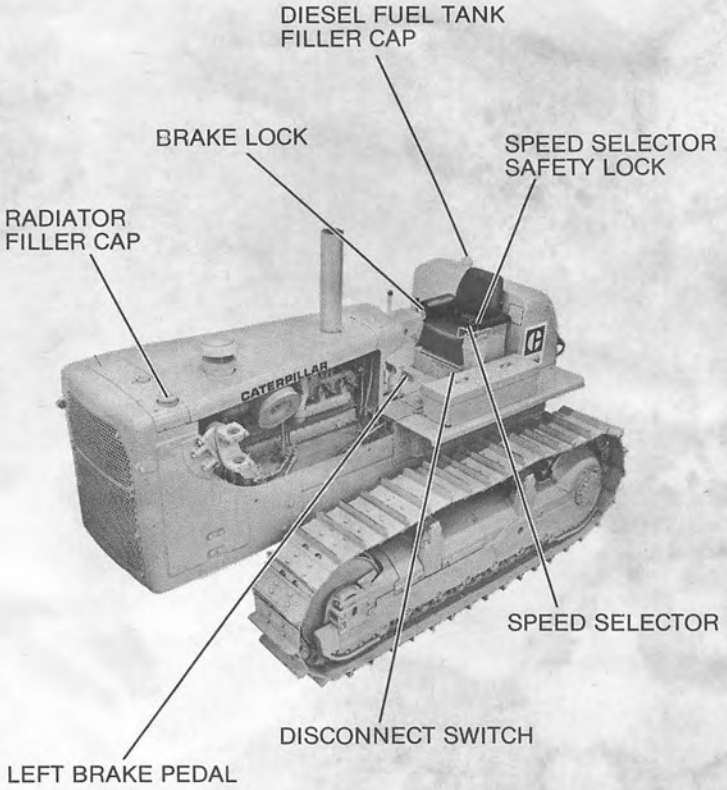
## D7, D8, D9 TRACTORS



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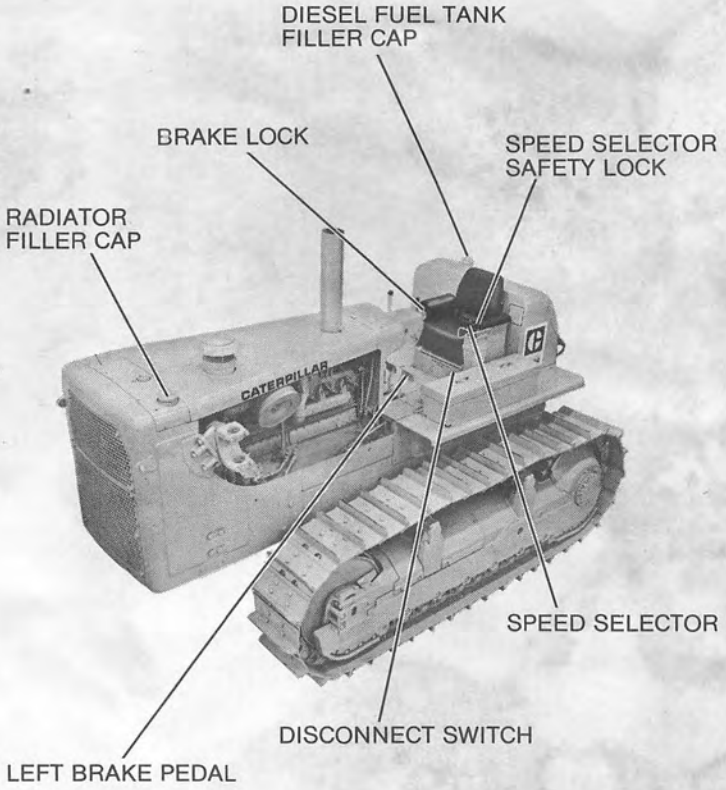
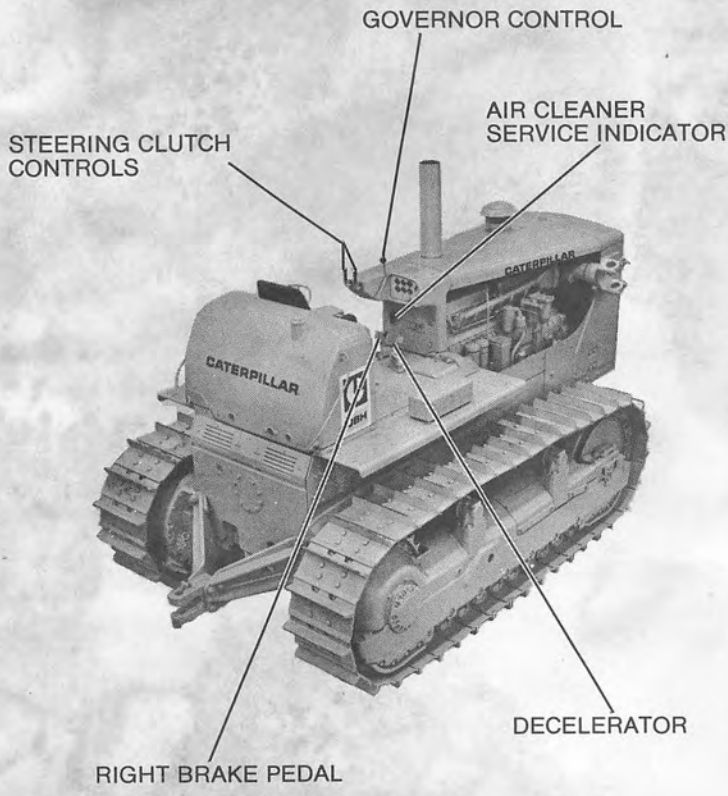
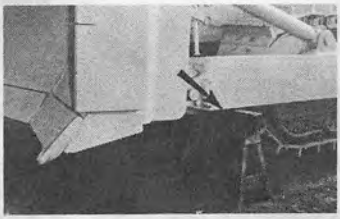
## D7, D8, D9 TRACTORS




GOVERNOR CONTROL
AIR CLEANER
SERVICE INDICATOR
STEERING CLUTCH
CONTROLS
CATERPILLAR
CATERPILLAR
DECELERATOR
RIGHT BRAKE PEDAL

# SAFETY



Lower or block equipment and stop engine before servicing.

Lower all equipment and set parking brake before leaving machine.

## General

Use the seat belt if equipped. Wear a hard hat, safety glasses and respirator as required by job conditions.

Know the hand signals and who gives them.

Do not smoke while fueling.

## Preparing to Operate

Report needed repairs.

Make certain all safety guards and covers are secured in place.

Clear personnel from machine and area.

Keep operator's compartment clean.

Move all controls to HOLD or NEUTRAL before starting engine.

Clear obstacles from path of machine — note hazards such as wires and ditches.

Start engine in well ventilated area.

Be particularly careful on machines you do not usually operate.

## Mounting and Dismounting

Use grab irons and steps. Do not jump off machine.

Shut-off engine and lower all equipment before leaving machine.

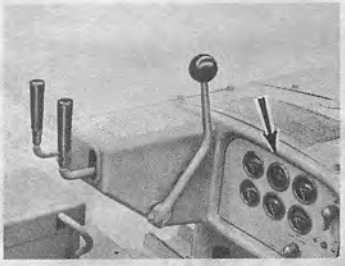
## Checking Controls

Check all controls for freedom from binding before starting.

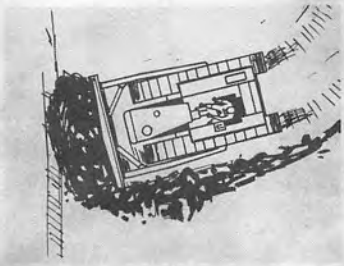
Test governor control.

Check condition of safety devices such as seat belts, lights, etc.

Test steering clutches and brakes while moving slowly.



Observe all gauges frequently —investigate improper readings.



Stay safe distance from edge of cliff or overhang.

## Operating

No riders.

Look behind machine before backing.

Stay clear of overhangs, electric wires, slide areas or other danger areas.

Use extra caution in crossing side hills, ridges, ditches and other obstructions.

Match speed with job conditions — do not coast.

Know your stopping distance at any given speed. Regulate travel speed accordingly.

Keep machine under control — do not try to work machine over capacity.

Stop tractor frequently at night—walk around and inspect tractor—stay alert.

Report needed repairs noted during operation.

## Shipping

Remove ice, snow or other slippery material from shipping vehicle and loading dock.

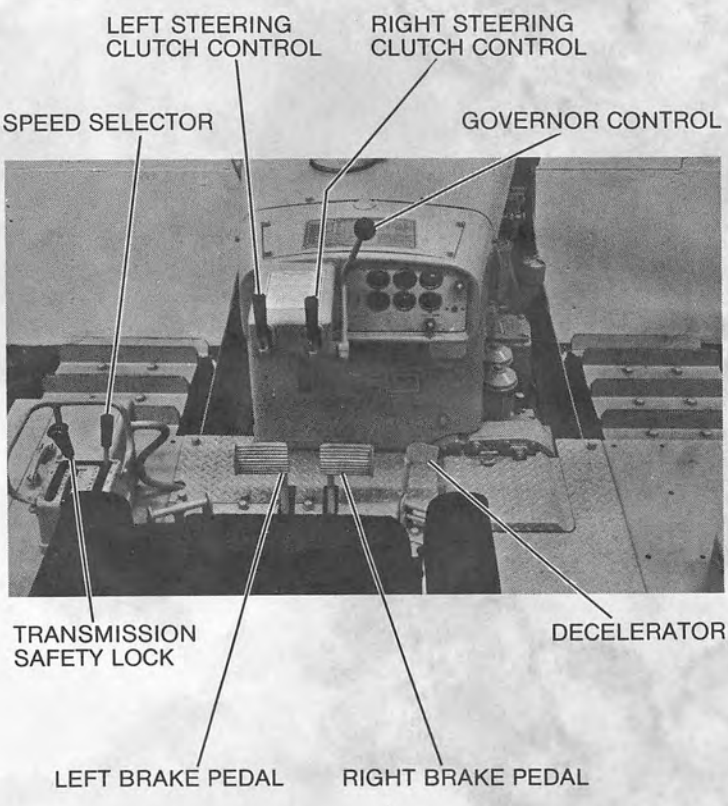
Cover engine exhaust opening to prevent turbocharger windmilling in transit

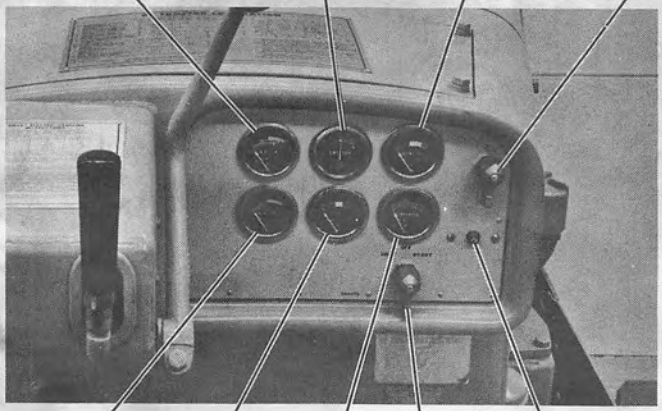
Observe all safety regulations governing loads.

Check with authorities for weight limits and overhead clearance of proposed route.

Block and tie tractor securely.

## OPERATOR'S COMPARTMENT



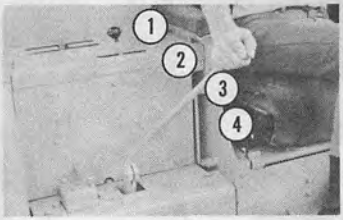

AMMETER
ENGINE OIL PRESSURE GAUGE
WATER TEMPERATURE GAUGE
LIGHT SWITCH
WATER PRESSURE GAUGE
CIRCUIT BREAKER RESET
FUEL PRESSURE GAUGE
HEAT-START SWITCH
TORQUE CONVERTER TEMPERATURE GAUGE

## CONTROLS

### Decelerator

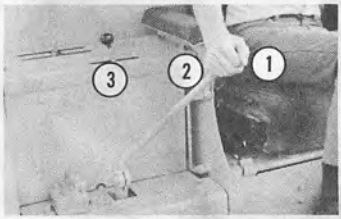
Set desired engine speed with governor control, push decelerator to reduce engine speed, release decelerator to increase engine speed to preset governor control setting.

### Hydraulic Blade Lift



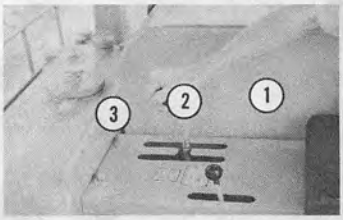

① RAISE ② HOLD ③ LOWER ④ FLOAT

### Hydraulic Blade Tilt



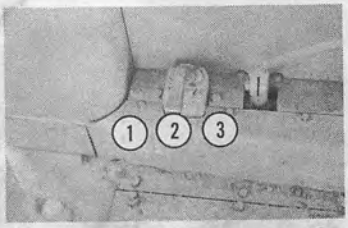

① LOWER LEFT SIDE ② HOLD ③ RAISE LEFT SIDE

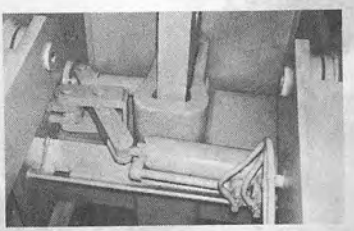
### Hydraulic Ripper Control




① RAISE ② HOLD ③ LOWER

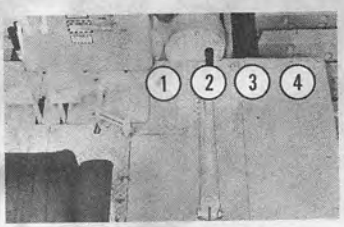
## Ripper Hydraulic Pin Puller

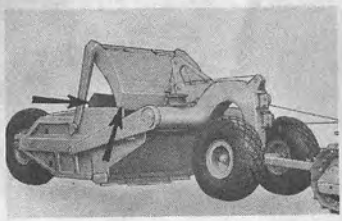


① PULL PIN ② HOLD ③ INSERT PIN

## Left Cable Control Drum

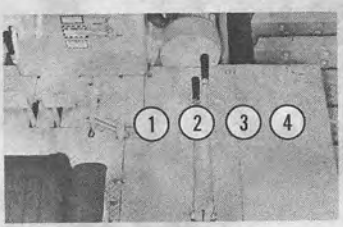


① RAISE APRON — Ejector moves forward. ② HOLD

③ LOWER APRON — Ejector moves back. ④ LOCKOUT

## Right Cable Control Drum

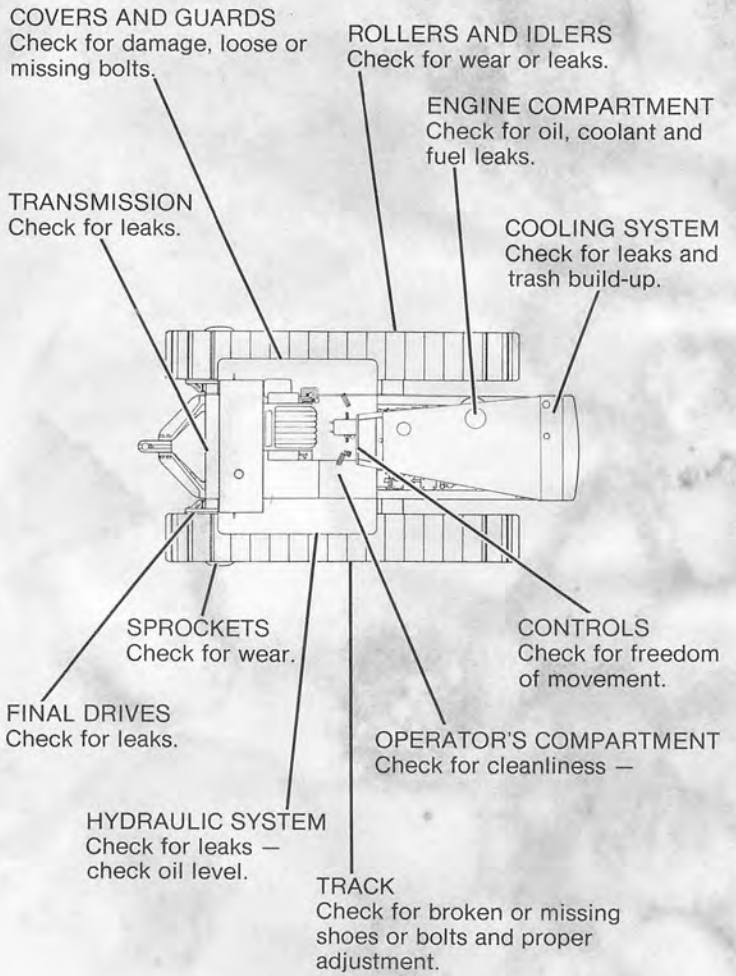


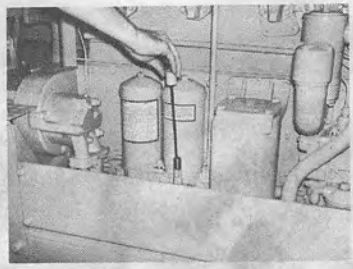

① RAISE BLADE (or scraper bowl). ② HOLD

③ LOWER BLADE (or scraper bowl). ④ LOCKOUT

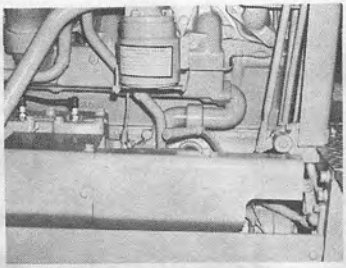
## BEFORE STARTING
### Walk-Around Checks

For your own safety, and maximum service life of the tractor, a thorough walk-around inspection should be made before mounting the machine to start the engine. Check for such items as loose bolts, trash build-up, lubricant, fuel or coolant leaks, condition of track and condition of cable.

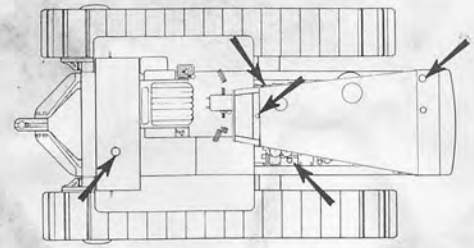




Check diesel engine oil level. Level should be in safe starting range mark on gauge.



Check starting engine oil level. Level should be up to the full mark.

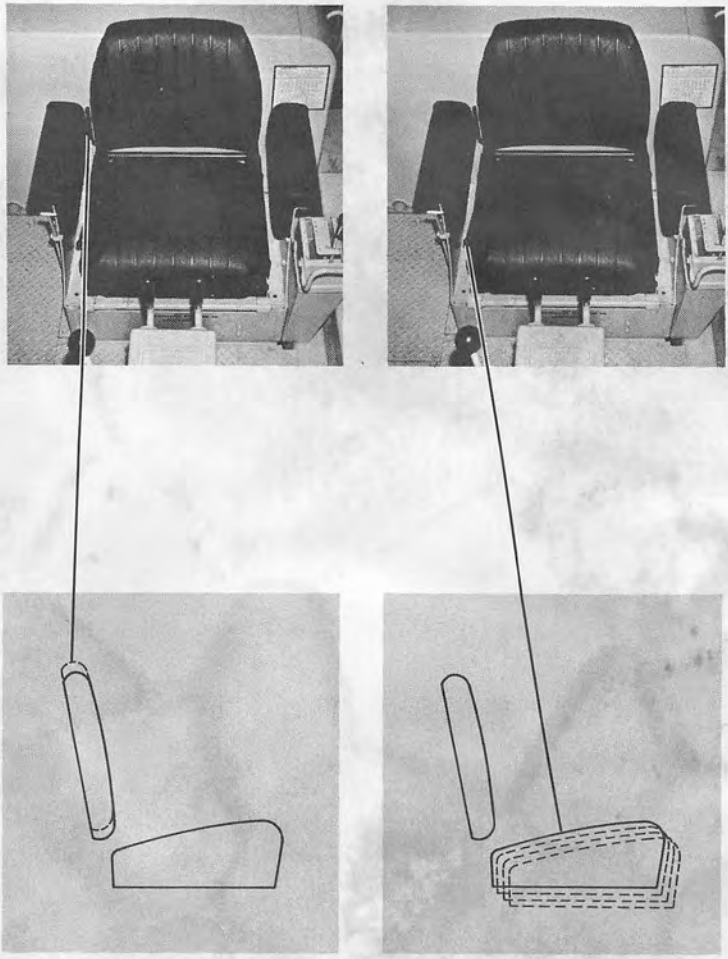


Check coolant level. Maintain coolant to within ½ inch (1 cm) of the bottom of the fill pipe.

Check diesel fuel tank level.

Check starting engine fuel level.

## Positioning Seat



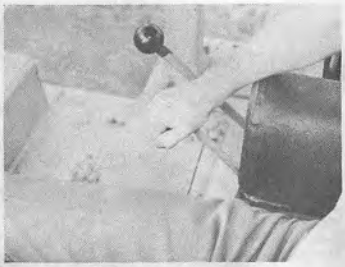
Adjust seat to allow full brake pedal travel with operator's back against seat back. This will permit application of maximum force on brake pedals.

Use the seat belt if equipped.

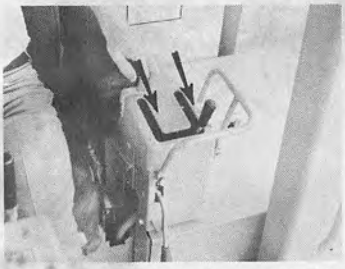
**WARNING**

**Always check condition of seat belt.**

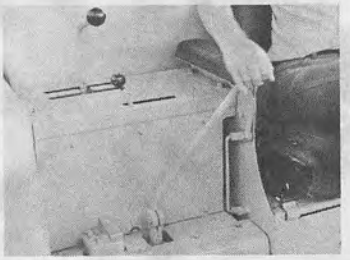
## STARTING THE ENGINE



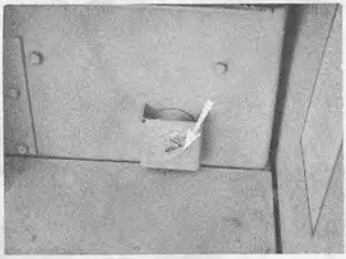
1. Depress both brake pedals and engage brake lock.



2. Move transmission control lever to NEUTRAL and engage safety lock.



3. Move all equipment controls to HOLD.

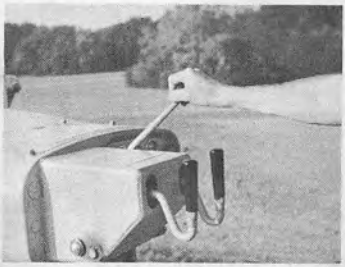


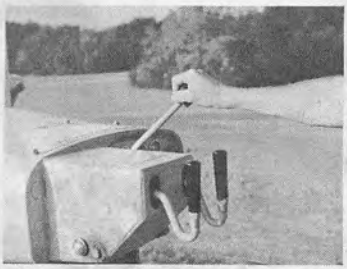
4. Turn disconnect switch on.

**Never turn disconnect switch OFF when engine is running.**

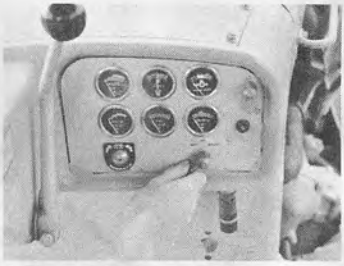
## Direct Electric Start

Above 60°F (16°C)





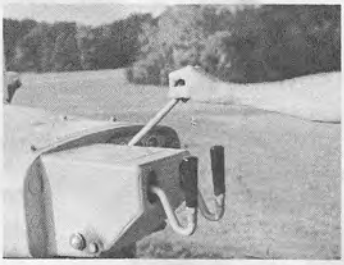
5. Move governor control to just past detent position.



6. Turn HEAT—START switch to START....

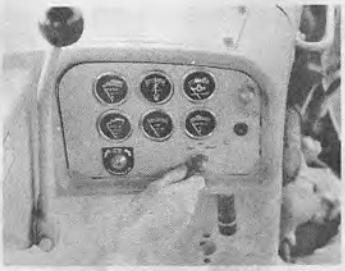
...release switch as soon as engine starts.

Below 60°F (16°C)



5. Move governor control to just past detent.

6. Turn HEAT—START switch to HEAT for indicated time (see Starting Aid Chart).



7. Turn HEAT – START switch to START[1]. . .

. . .release switch as soon as engine starts.

8. When engine starts it may be necessary to return HEAT–START switch to HEAT until engine runs smoothly.

**Never switch to HEAT when engine is warm and running.**

**STARTING AID CHART**

| STARTING TEMPERATURE | GLOW PLUG HEAT TIME |
|---|---|
| Above 60°F (16°C) | NO |
| 60°F (16°C) to 32°F (0°C) | 1 MINUTE |
| 32°F (0°C) to 0°F (–18°C) | 2 MINUTES |
| [2] Below 0°F (-18°C) | 3 MINUTES |

**[1] If engine does not start after 10 seconds, switch to HEAT for 30 seconds then start. If engine again does not start, let starter cool 2 minutes then repeat starting procedure.**

**[2] Heating of coolant and crankcase oil, use of starting fluid aid and/or use of extra battery capacity may be required.**

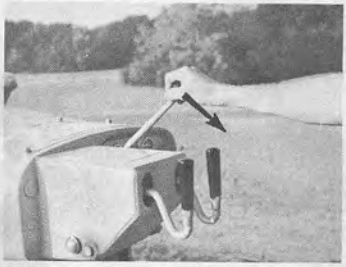
## Starting With Boost

When using jumper cables be sure to connect in parallel: Negative (–) to negative (–) and positive (+) to positive (+).

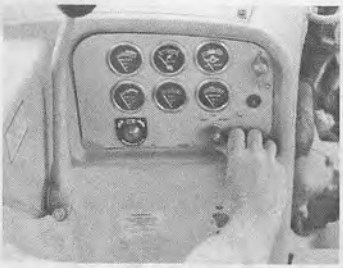
**⚠ WARNING**

**Attach ground cable last, and remove first, to prevent sparks from occurring near the battery which could cause battery vapors to explode. Attach ground cable from booster battery to a point away, and below, the battery on the machine to be started.**

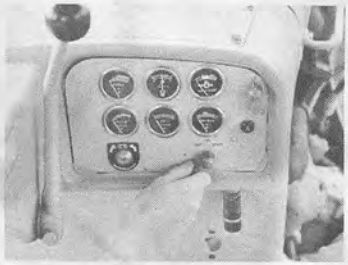
## When Starting Fluid is Required



5. Move governor control to just past detent.



6. Turn HEAT—START switch to HEAT for indicated time (see Starting Aid Chart).



7. Turn HEAT—START switch to START...

...and discharge starting aid capsule or spray starting fluid sparingly into precleaner while cranking.

8. When engine starts it may be necessary to return HEAT—START switch to HEAT until engine runs smoothly.

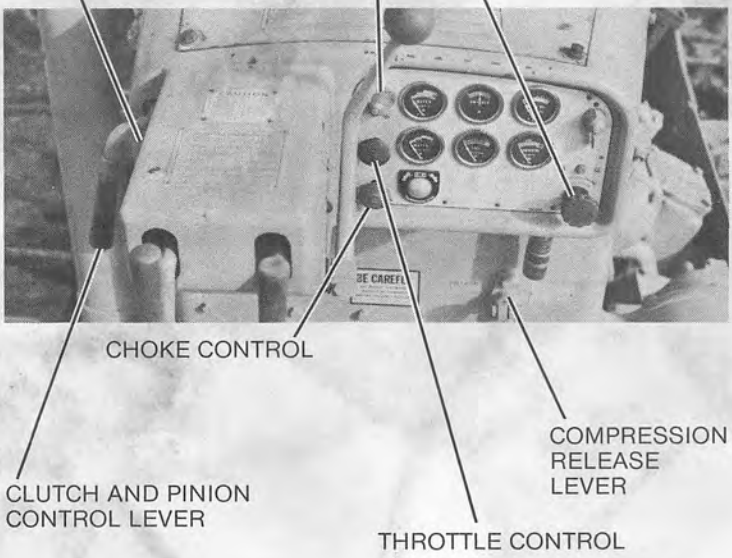
**WARNING**

**Use starting fluid sparingly. Follow manufacturers instructions carefully.**

**CAUTION**

**If engine again does not start, let starter cool 2 minutes then repeat starting procedure.**

## Gasoline Starting Engine

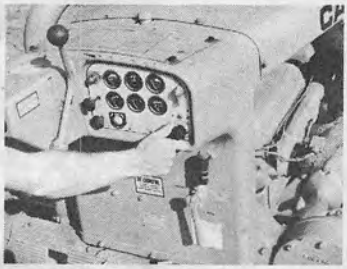



1. Turn disconnect switch to ON.
2. Move governor control lever to OFF.

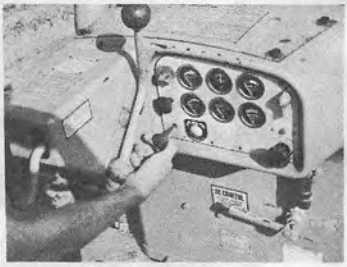
3. Move compression release lever to START.

4. Move starting engine transmission lever to HIGH.

5. Push in starting engine control lever to disengage starting engine clutch.

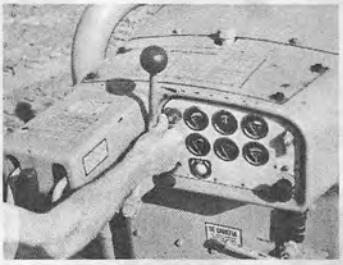


6. Turn fuel valve to open.

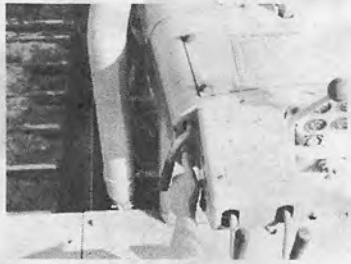


7. Pull choke control out.

8. Pull throttle control out ¼ to ½ of full open position.



9. Turn magneto switch to ON.



10. Press starter button... Release when starting engine starts.

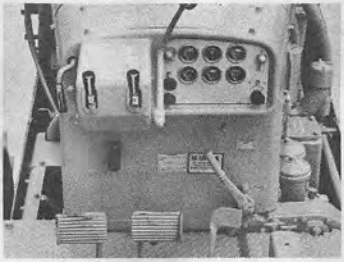
11. As engine warms up push choke control in.

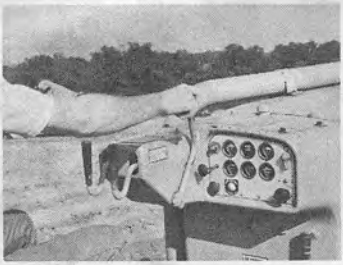
12. When engine runs smoothly pull throttle control out to the high idle position.

13. Push in on clutch control lever to apply clutch brake. Hold for 5 seconds.

14. Pull clutch control lever to engage the starting engine clutch and pinion (*see next page for cold weather starting).

15. Move compression release control lever to RUN.





**CAUTION**

**When diesel engine starts, starting engine clutch and starting pinion automatically disengages. DO NOT move clutch and pinion control lever while diesel engine is running.**

16. Pull the governor control lever to open the fuel injection pumps.

17. Push the starting engine throttle control lever to ¼ to ½ speed position when diesel engine starts.

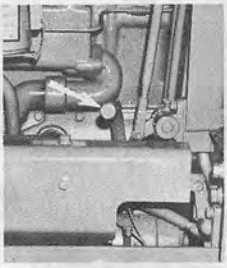
18. Turn fuel valve control to OFF.

19. Push throttle control in when starting engine stops.

20. Turn magneto switch to OFF.

***Starting at Extremely Cold Temperatures.**

1. Push in starting engine control to disengage starting engine clutch.



2. Move starting engine transmission control lever to LOW.

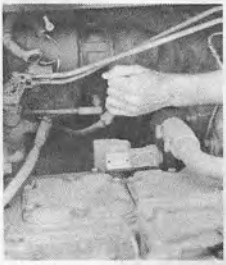
3. Pull out starting engine control to engage starting engine clutch.

4. When cranking effort is reduced move compression control lever to RUN.

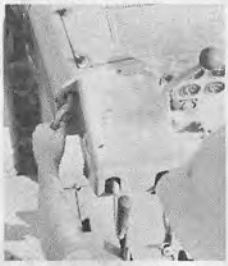
5. Allow diesel engine to turn several minutes.

6. Move compression release control lever to START.

7. Push in starting engine control to disengage starting engine clutch.



8. Move starting engine transmission control to HIGH.



9. Pull out starting engine control to engage starting engine clutch.

10. Proceed with step 14 on page 21.

## AFTER STARTING

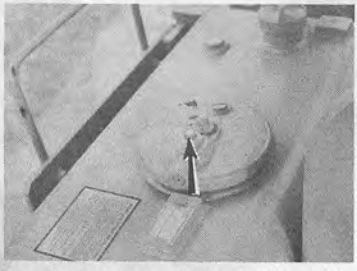
1. Keep engine speed low until oil pressure registers. If oil pressure does not register, stop engine and investigate.

2. Check air cleaner service indicator. If RED piston is locked in the visible position have air cleaner serviced.

3. Operate engine under light load for 5 minutes.

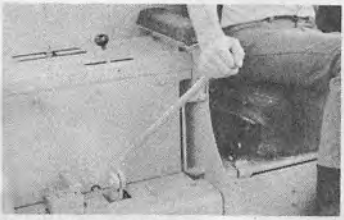
4. Check gauges frequently during operation. All gauges must indicate in the NORMAL operating range. The ammeter is normal when the indicator is at or on the + side of zero.

5. If tractor is equipped with water pressure and water temperature gauges, both gauges should register in the same color ranges. Do not operate when temperature gauge indicator is beyond color range indicated by pressure gauge. The tractor may be operated if pressure gauge indicator is beyond color range indicated by temperature gauge.



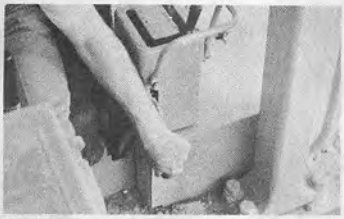
6. If transmission or hydraulic filter indicators show RED with engine running at high idle and oil warm, have filters serviced.

## MOVING THE TRACTOR



1. Raise lowered equipment approximately 15 inches (½ m).

2. Depress both brake pedals to release brake lock.



3. Release transmission safety lock.

4. Move transmission control lever to desired direction and gear.

5. Pull governor control to increase engine speed. Push governor control to decrease engine speed.

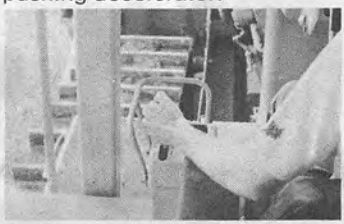
If equipped with a decelerator, move governor control lever to desired engine speed then push decelerator to reduce engine speed. Release decelerator to increase engine speed to governor control lever setting.

## To Change Direction

Gear and directional shifts at full engine speed are permissible, however, for safety, operator comfort and maximum service life of power train components, decelerating and/or braking is recommended.

1. Decrease engine speed by pushing governor control or pushing decelerator.

2. Push both brake pedals.



3. Move transmission control lever to desired travel direction gear.

4. Release brake pedals.

**NOTE**

**Do not use brake pedals as foot rests.**

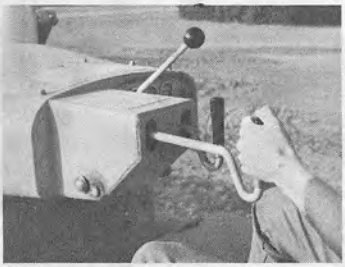
5. Increase engine speed by pulling governor control...

...or releasing decelerator.

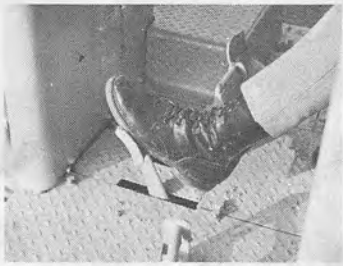
## Normal Steering

Gradual RIGHT turn — release right steering clutch.

Sharp RIGHT turn — release right steering clutch and apply right brake.



Gradual LEFT turn — release left steering clutch.



Sharp LEFT turn — release left steering clutch and apply left brake.

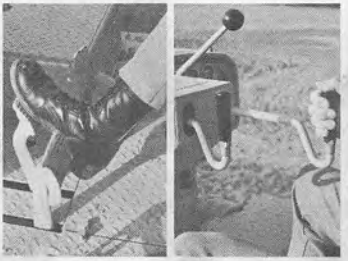
**WARNING**

**Keep tractor under control at all times. DO NOT PUT GEAR SELECTOR IN NEUTRAL OR ALLOW TRACTOR TO COAST DOWNHILL. Select gear range necessary before starting downgrade. DO NOT change gears while going downhill.**

When tractor is pulling a load downhill — steer in normal manner.

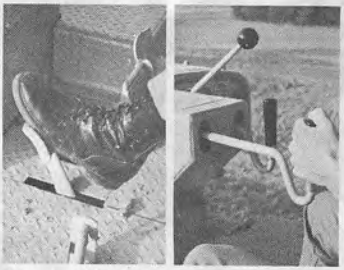
## Steering on Steep Downgrade

Gradual RIGHT turn — release left steering clutch.

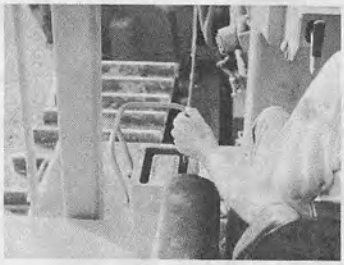


Sharp RIGHT turn — release right steering clutch and apply right brake.

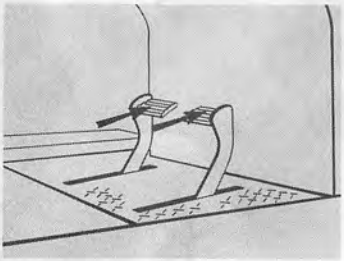
Gradual LEFT turn — release right steering clutch.



Sharp LEFT turn — release left steering clutch and apply left brake.

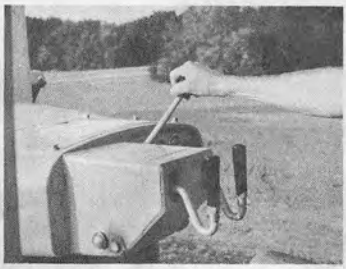


When load is pushing tractor put gear selector in FIRST before starting downhill. Do not upshift.

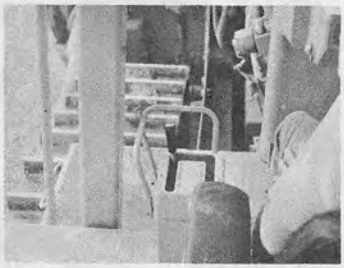


If engine starts to overspeed depress both brake pedals.

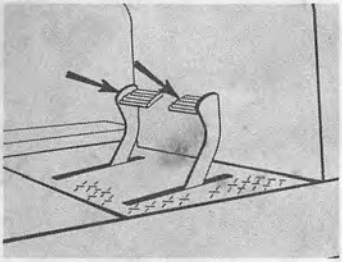
## PARKING THE TRACTOR



1. Reduce engine speed by pushing governor control.

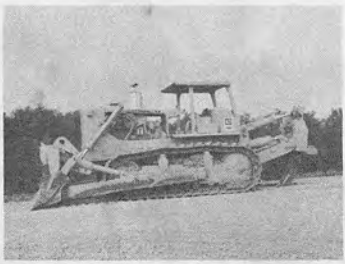


2. Move transmission control lever to NEUTRAL.



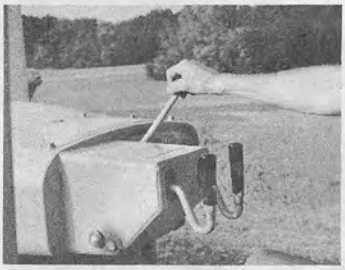
3. Push both brake pedals and engage brake lock.

4. Engage safety lock.

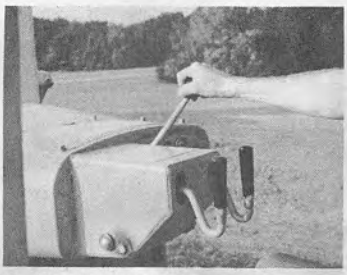


5. Lower all equipment.

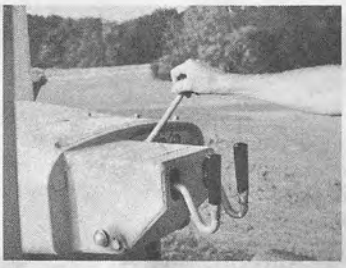
## STOPPING THE ENGINE



1. Operate tractor at reduced load for 5 minutes and stop tractor.



2. Push governor control to low idle (detent) for 30 seconds.



3. Push governor control past detent to shut off engine.

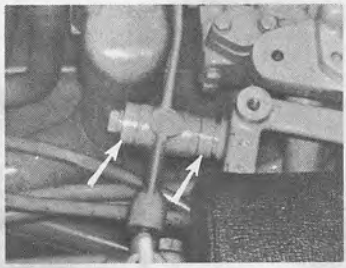
4. Turn disconnect switch OFF and remove key.

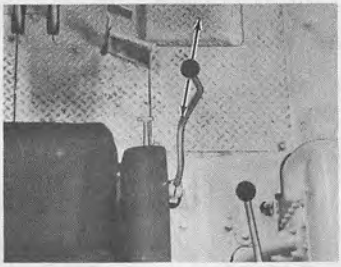
**CAUTION**

**Never turn disconnect key to OFF while engine is running, serious damage to the electric system may result.**

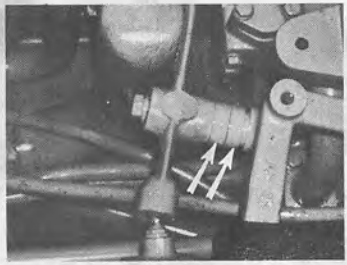
## OPERATING ADJUSTMENTS

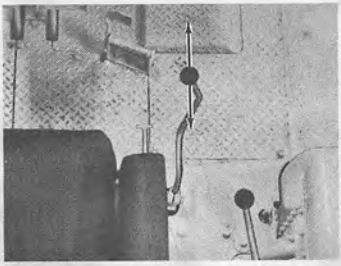
### Bulldozer Hydraulic Control Lever



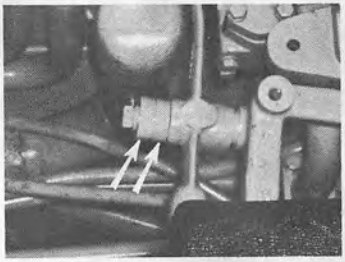


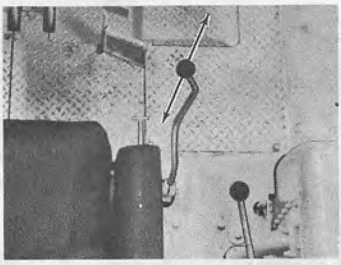
One spacer on each side of bellcrank—control operates at 10° angle from seat





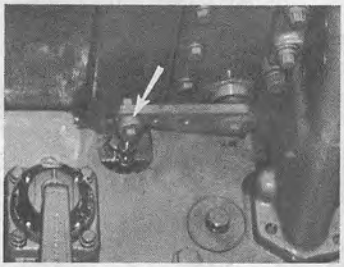
Both spacers to rear of bellcrank—control operates parallel to seat

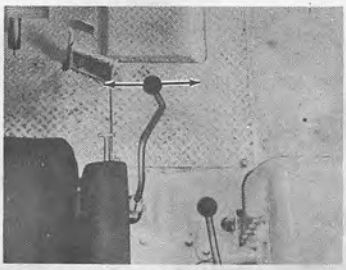




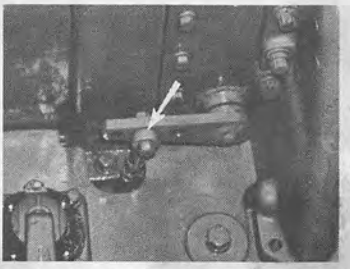
Both spacers in front of bellcrank—control operates at 20° angle from seat.

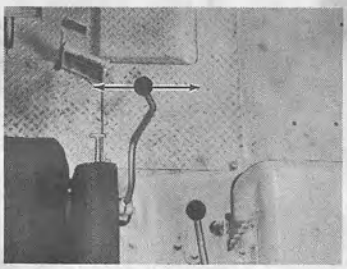
## Bulldozer Tilt Control Lever





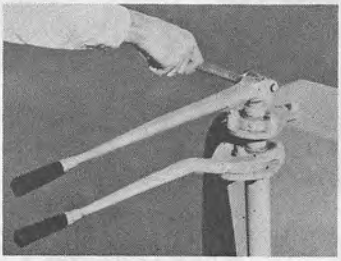
Link attached to outside hole in lever for normal operating resistance



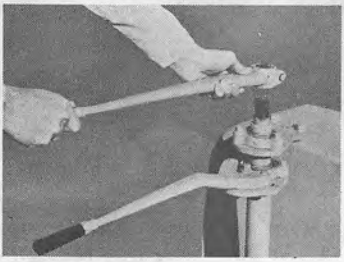


Link attached to center hole in lever for increased operating resistance

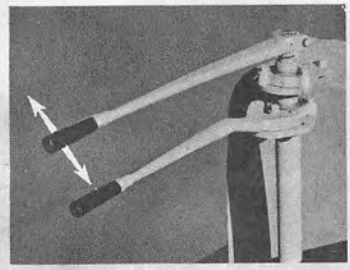
## Cable Control Lever Lateral Adjustment (upper lever)



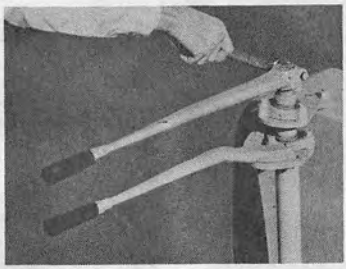
1. Loosen clamp bolt



2. Remove lever

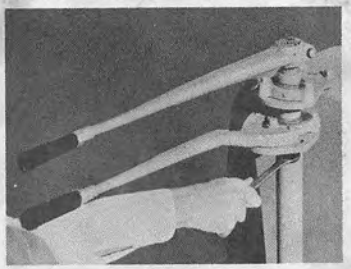


3. Install lever in desired position

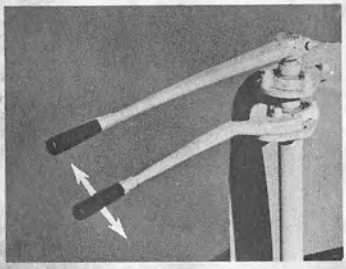


4. Tighten bolt

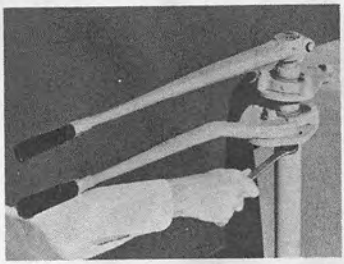
## Cable Control Lever Lateral Adjustment (lower lever)



1. Loosen bolts

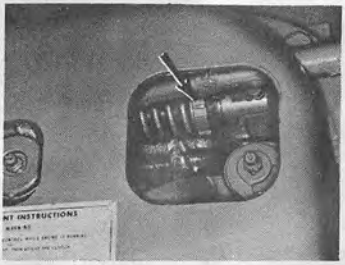


2. Move lever to desired position



3. Tighten bolts

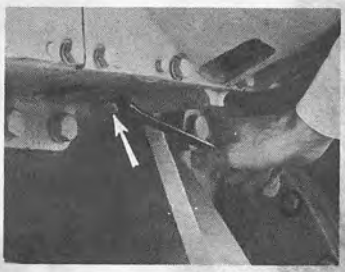
## Cable Control Brake



127 CABLE CONTROL

Turn nut towards spring to increase brake capacity for scraper operation

Turn nut away from spring to decrease brake capacity for bulldozer operation

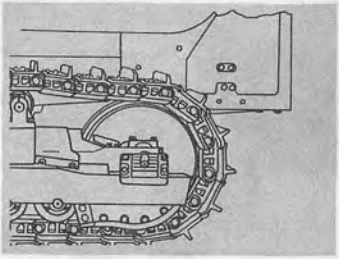


128-129 CABLE CONTROL

Tighten bolt to increase brake capacity for scraper operation

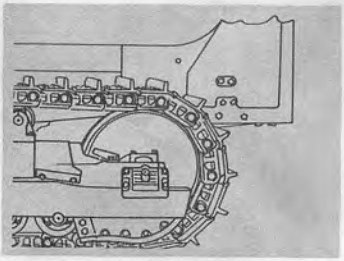
Loosen bolt to decrease brake capacity for bulldozer operation

## Two Position Idler



LOWER POSITION

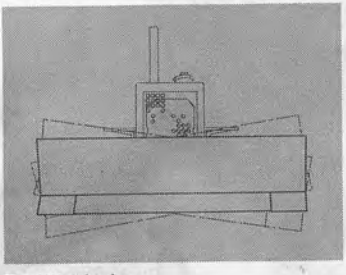
Normal use



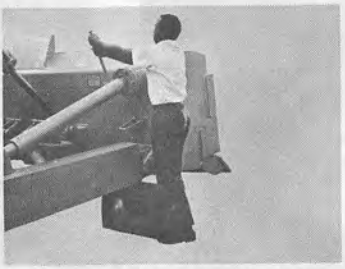
UPPER POSITION

Drawbar use

## Bulldozer Blade Tilt and Tip

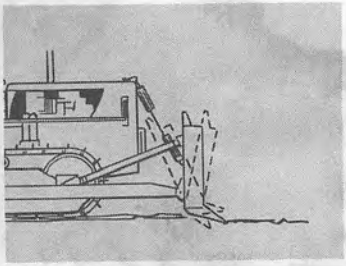


To tilt blade:



1. Shorten brace on side to be low

2. Lengthen brace on side to be high

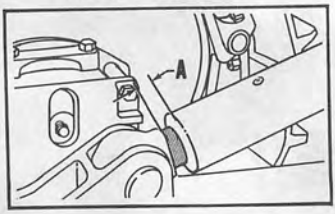


To tip blade:

1. Shorten both braces to tip blade back

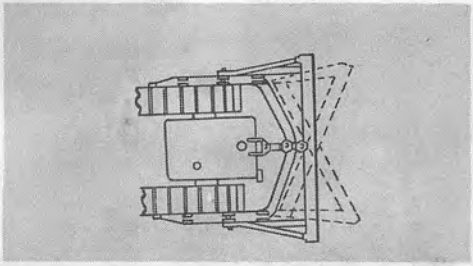
2. Lengthen both braces to tip blade forward

### SPECIFICATIONS

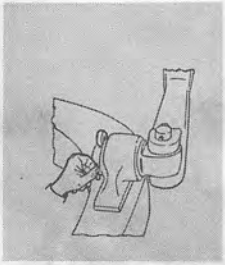



| MODEL | MAXIMUM TILT or TIP "A" | NORMAL OPERATION "A" |
|---|---|---|
| 7A | 3" (75 mm) | 2" (51 mm) |
| 7S,7U | 4.25" (108 mm) | 2" (51 mm) |
| 8A,8S,8U,9A | 4.9" (124 mm) | 2.4" (61 mm) |
| 9S,9U | 4.6" (117 mm) | 2.5" (64 mm) |

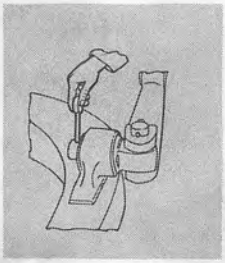
## Bulldozer Blade Angling



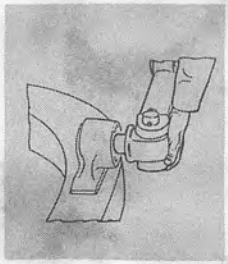
To angle blade . . .



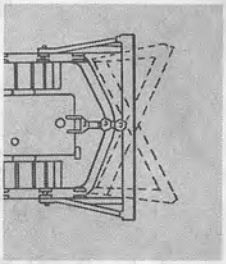
1. Remove lock pin



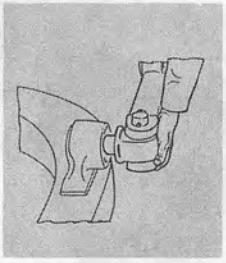
2. Remove retainer pin



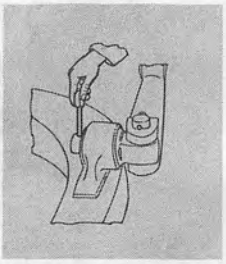
3. Pull coupling pin



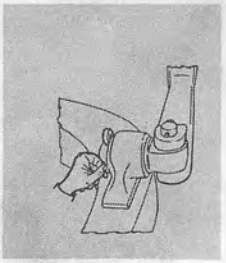
4. Position blade



5. Install coupling pin

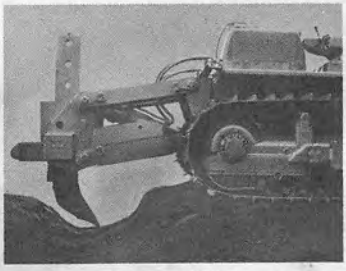


6. Install retainer pin

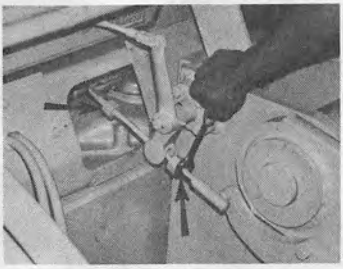


7. Install lock pin

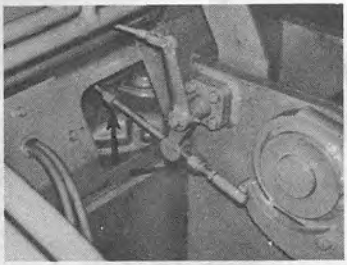
## Ripper Kickout (parallelogram type)



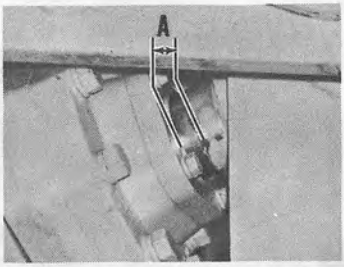
1. Lower ripper all the way



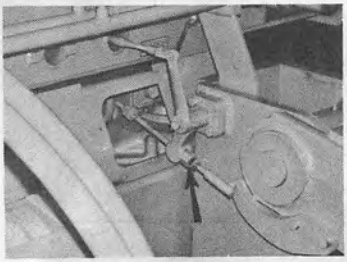
2. Loosen locknuts



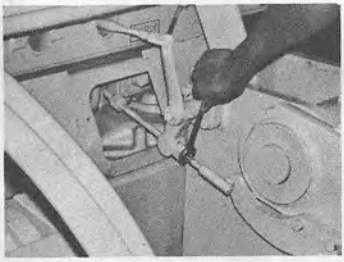
3. Turn collars away from guide



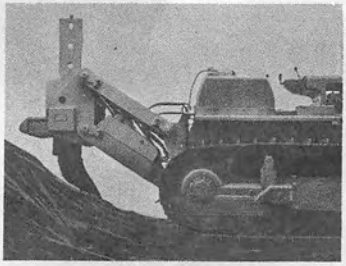

4. Raise ripper to extend 1/2 inch (12,7 mm) of cylinder rod "A"



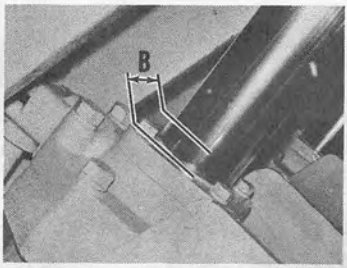
5. Turn collar up to guide



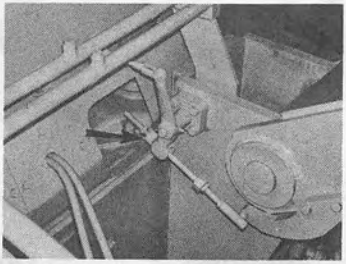
6. Tighten locknut



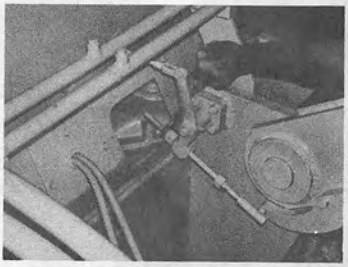
7. Raise ripper all the way




8. Lower ripper to retract 1/2 inch (12,7 mm) of cylinder rod "B"



9. Turn collar down to guide



10. Tighten locknut

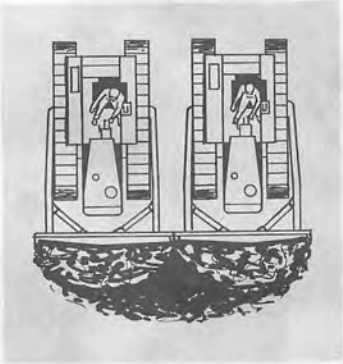
# OPERATING TECHNIQUES

## Dozing

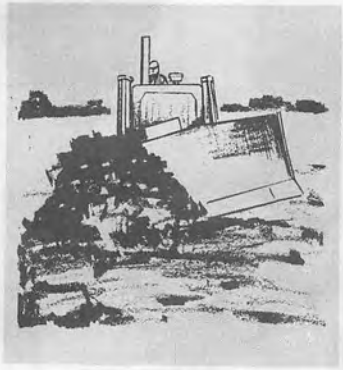
Straight dozing: If the blade digs in and the rear of the tractor rises, raise blade to continue even cut. When moving a heavy load causes travel speed to drop—shift to a lower gear and/or ease the blade up slightly

When doing finishing or leveling work, a full blade handles easier than a partially loaded blade

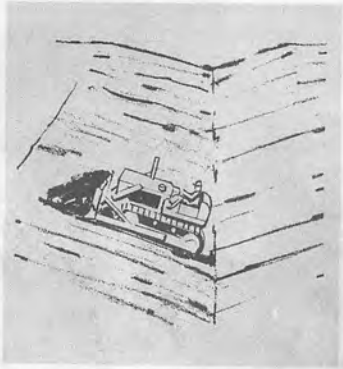
Slot dozing: This allows larger loads to be carried in front of the blade. It is used in stockpiling and high production bulldozing



Side-by-side dozing: Use when moving large quantities of loose material. Keep blades close together and tractors parallel

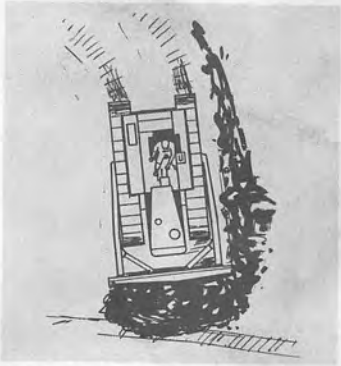


Angle dozer ditching: Tilt blade and work with low side in ditch center. Level blade when required depth and slope are reached.



Straight dozer ditching: Tilt blade to cut shallow "V" ditches. Larger ditches - doze at right angles to center line of ditch. When desired depth is reached doze length of ditch to smooth sides and bottom

Angle dozer backfilling: Travel parallel to ditch



Straight dozer backfilling: Push at a 90° angle to ditch.

Bulldoze downhill where possible

## R Bulldozer Operation

Improve Dozer Penetration:

Extend shanks to aid dozer penetration in material such as hardpan.

Pry Out Rocks or Boulders:

Tilt blade and extend shank to float out rocks and boulders.

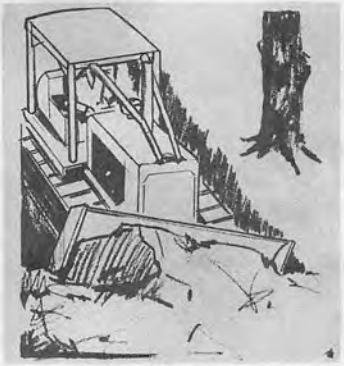
Rip Next to High Wall:

Extend shank on side next to high wall or toe of slope to rip material a conventional ripper cannot reach.

Cut Roots:

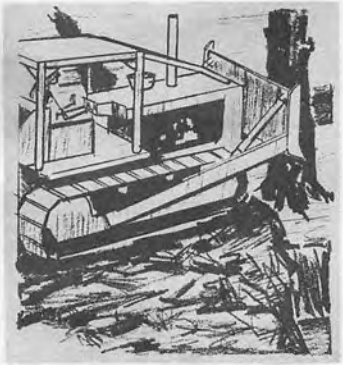
Extend shanks to cut roots and remove stumps in land clearing operations.

## Land Clearing



Tree Removal: 1. Check tree for dead limbs
Cut roots on side opposite direction of fall

2. Cut roots on sides parallel to direction of fall



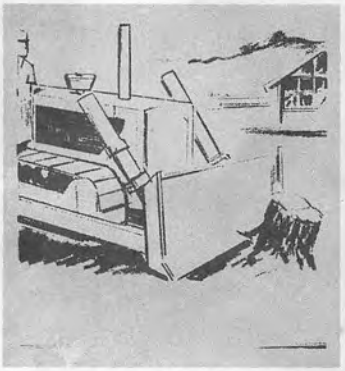
3. Ease into tree. Push in direction of fall with blade high. Build earth ramp if higher contact is needed

4. Back away immediately when tree starts to fall

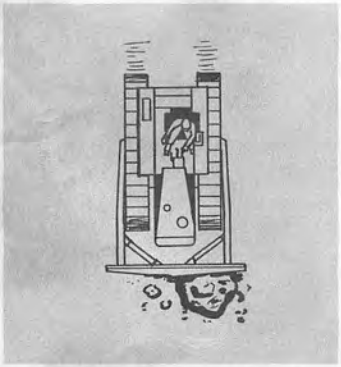
Large brush and medium size trees—contact tree 12 to 16 inches (300 to 400 mm) above ground. Move forward while lifting blade

Do not drive onto stump while tree is falling

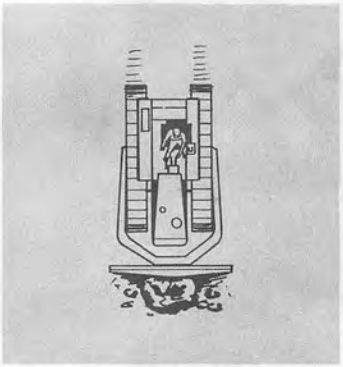
Brush clearing: Lower blade a few inches into the ground and move forward. Lift blade when brush is out to loosen earth from roots



Stump removal: Lift blade while pushing



Rock removal: Straight dozer—contact rock at one side of blade



Rock removal: Angle dozer—contact rock at center of blade

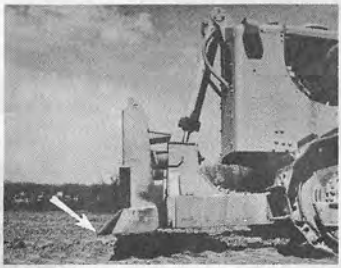
Side hill cut: Start cut downgrade if possible. Slope to inside of cut. Doze bench wide enough for machines that will follow.

Make starting cut with a series of downhill passes.

Use extra caution when crossing side hills, ridges, logs and ditches.

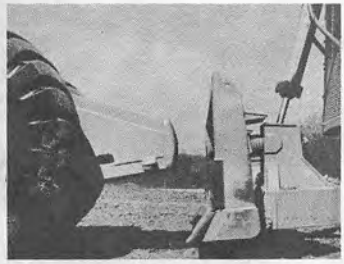
Report any mechanical problems noted during operation

## Push Loading



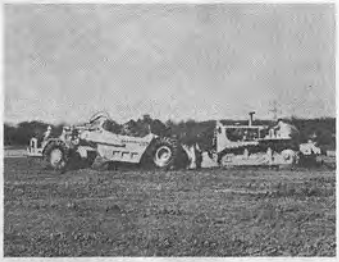
Position bulldozer cutting edge slightly above ground level

Tractor should not be traveling more than 3 miles per hour faster than scraper when contact is made



Contact push block squarely. Don't allow blade or push cup to contact scraper tires

Do not lift rear of scraper off the ground.



Upshift tractor when cut is complete to help scraper get moving

When tandem pushing, the front tractor must be equipped with a case mounted tandem push block

## Ripping

**CAUTION**

**Do not turn or back tractor while shanks are in the ground. Twisting strain on the shanks and tips may cause failure. Check ripper tip and shank protecter frequently.**

Use FIRST speed for most ripping operations. Start with one shank. Rip downhill when possible. (Always use center shank in 1 shank ripping.)

If material is penetrated easily and breaks up satisfactorily, add shanks rather than increase speed.

Keep several inches of loose material on top of the unripped formation to cushion the tractor and improve traction.

Cross rip only where one way ripping will not adequately loosen the formation.

Rip a scraper cut in the same direction the scraper loads.

Normally rip as deep as possible. It may be necessary to rip at partial depth to remove material in its natural layers.

Use one shank in hard to rip material. One shank ripping is effective in severing reinforcing rod or mesh in concrete road surfaces.

Use two shanks in rock with fractures or faults. If the tractor begins to stall or the tracks spin — use only the center shank.

Three shanks work well in packed soil, hard pan, clay, shale, cemented gravel and asphalt roads.

Work ripper up and down to lift out and break up asphalt surfaces.

Keep pass spacing close when final material size must be relatively small.

Tandem ripping (No. 8 and No. 9 Single Shank Rippers only). Place dozer blade on ripper push shelf. When tandem ripping is used to increase tractive effort only, place dozer blade hydraulic control in float. Apply down pressure or push shelf when extra weight is needed for penetration. Cable dozers add at least the weight of the blade.

## Adjustable Ripper

**All other ripping information in this guide also applies to the adjustable ripper.**

The angle of the shank can be adjusted while ripping to achieve maximum performance throughout each ripping pass, regardless of ripper shank length, ripping depth, or tractor speed.

To insert the ripper into the material to be ripped, adjust the angle of the shank beyond vertical position to obtain the correct tip angle for easy entry into the material. Angle will differ depending upon material being ripped.

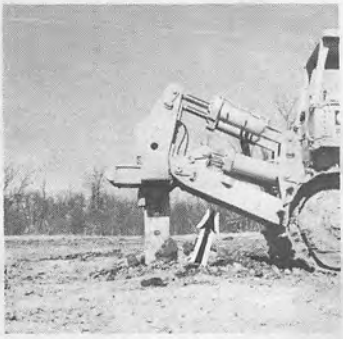
Lower ripper into the material while moving forward. When desired ripping depth is reached, move the shank forward to obtain the correct angle for best performance, usually between vertical and shank forward position.

Move the ripper shank to the forward or "shank in" position when prying out lodged material.

Move the ripper to the rear or "shank out" position when additional clearance between ripper and track is necessary.

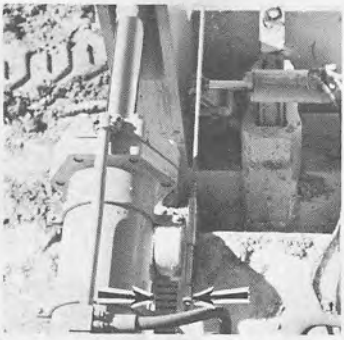
Shallow ripping is recommended when material is to be removed by a scraper, loader, or dozer.

Deep ripping is recommended when material is to be removed by an excavator.

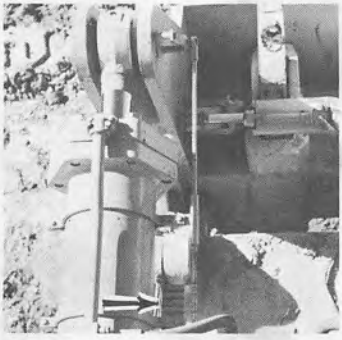


Use a longer shank to provide more clearance between the ground and the beam. The longer shank may be used for shallow ripping as well as deep ripping.

## Shank Angle Indicator

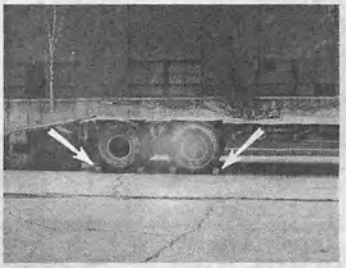


When desired ripping angle is achieved, note location of indicator.



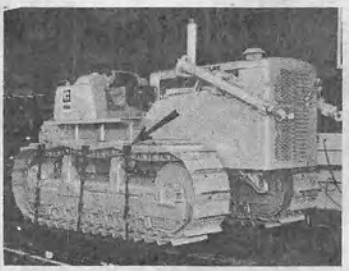
To reposition shank to desired angle, move shank until shank angle indicator is at original position.

## SHIPPING HINTS



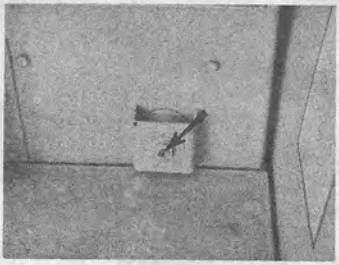
Always block trailer or rail car wheels before loading tractor

Remove ice, snow or other slippery material from shipping vehicle and loading dock.



Install tie-downs at several locations

Apply brake lock and place transmission in NEUTRAL.



Remove disconnect switch key

Cover engine exhaust opening to prevent turbocharger windmilling in transit

**⚠ WARNING**

**CHECK TRAVEL ROUTE FOR OVERPASS CLEARANCES. MAKE SURE THERE WILL BE ADEQUATE CLEARANCE IF VEHICLE BEING TRANSPORTED IS EQUIPPED WITH ROPS, CAB OR CANOPY.**

Check state and local laws governing weight, width and length of load.

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